

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-203039

(43)Date of publication of application : 04.08.1998

(51)Int.Cl.

B41N 1/14
B41C 1/10
B41M 5/00
// D21H 19/20

(21)Application number : 09-021013

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(22)Date of filing : 20.01.1997

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(54) PREPARATION OF INK JET TYPE PROCESSING PRINTING PLATE

(57)Abstract:

PROBLEM TO BE SOLVED: To achieve multi-printing of a print having clear images by using a paper substrate coated on both sides thereof with a resin as a water resistant substrate for an original plate having an image receiving layer for lithographic printing.

SOLUTION: A 5% water solution of calcium chloride is applied 20g/m² to a wood free paper of base weight 100g/m² and it is then dried to obtain a conductive original paper. An aqueous latex comprising a copolymer of ethylene-methyl acrylate-acrylic acid (molder ratio of 65:30:5) is applied to both sides of the conductive original paper and then it is dried such that a coated volume after being dried becomes 0.2g/m². Next, the original paper is laminated 25μm thick on both sides thereof by extruding a pellet produced when 70wt.% of low density polyethylene having a density of 0.920g/cc and a melt index of 5.0g/10-min., 1wt% of high density polyethylene having a density of 0.950g/cc and a melt index of 8.0g/10min., and 15wt.% of conductive carbon are fused and kneaded to thereby obtain a substrate having polyethylene layers of a uniform thickness.

LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than
the examiner's decision of rejection or
application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's
decision of rejection]

[Date of requesting appeal against examiner's
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CLAIMS

[Claim(s)]

[Claim 1] The creation approach of the ink-jet type platemaking printing version characterized by to use the paper base material which covered both sides with resin as said waterproof base material in the creation approach of the ink-jet type platemaking printing version which oily ink is made to breathe out on a waterproof base material using electrostatic field, and forms an image by the ink-jet method on on the image acceptance layer of the original edition for lithography which has an image acceptance layer.

[Claim 2] The creation approach of the ink jet type platemaking printing version of claim 1 that the double-sided coat resin of said waterproof base material is polyethylene, and a consistency consists of mixture with which a consistency contains the low density polyethylene for 1.0-30.0g / 10 minutes in a list ten to 90% of the weight, and 0.940-0.970g [cc] /and a melt index contain [0.915-0.930g / cc / /and a melt index] the high density polyethylene for 1.0-30.0g / 10 minutes ten to 90% of the weight.

[Claim 3] Said oily ink is electric resistance 10⁹. The creation approach of the ink jet type platemaking printing version of claims 1 or 2 which distribute a solid-state and a hydrophobic resin particle in ordinary temperature at least in more than 0.1 μm and a with a dielectric constant of 3.5 or less non-aqueous solvent.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] The platemaking image quality and printing image quality of this invention which used oily ink for the detail further about the creation approach of the lithography version of having used the ink jet recording method are good, and it is related with the creation approach of the ink jet type platemaking printing version of excelling in print durability.

[0002]

[Description of the Prior Art] The offset lithography method which performs platemaking, i.e., image formation, to the original edition for straight-writing mold lithography which has an image acceptance layer on a waterproof base material by various approaches in the inplant printing field with development of the latest business machine and progress of automation, and creates the printing version has spread.

[0003] An oleophilic image forms by the conventional plate for straight-writing mold lithography preparing an image acceptance layer on the paper base material which applied the waterproof layer, and oily ink being used for it, and it forming an oleophilic image by the typewriter or handwriting on such the original edition for straight-writing mold lithography, or carrying out the thermofusion imprint of the image from an ink ribbon with a thermal transfer printer, and the approach of performing hydrophilization processing of the non-image section etc. if needed, and using as the printing version is learned.

[0004] However, since the printing version created by such approach has the inadequate mechanical strength of the image section, the water resisting property of a paper base material is inadequate, and during printing, a version will be swollen or extended and will produce lack of the image section.

[0005] Moreover, engraving the above-mentioned original edition for straight-writing mold lithography with an ink jet printer was also performed, and although the water color ink which used the dispersion medium as water at this time was also used, in water color ink, there was a problem that a blot arises in the image on a plate, or writing speed fell since desiccation is slow. In order to mitigate such a problem, the approach using the oily ink which made the dispersion medium the non-aqueous solvent is indicated by JP,54-117203,A. However, since ink is breathed out from the thin nozzle, this approach is a lifting and a cone about blinding in a discharge part.

[0006]

[Problem(s) to be Solved by the Invention] This invention is made paying attention to the above-mentioned trouble, and is offering the creation approach of the ink jet type platemaking printing version made possible [several multi-sheet printing of the print of a clear image] for the object.

[0007]

[Means for Solving the Problem] The above-mentioned object is attained by this invention of following the (1) - (3).

(1) The creation approach of the ink-jet type platemaking printing version characterized by to use the paper base material which covered both sides with resin as said waterproof base material in the creation approach of the ink jet type platemaking printing version which oily ink is made to breathe out on a

waterproof base material using electrostatic field, and forms an image by the ink-jet method on the image acceptance layer of the original edition for lithography which has an image acceptance layer.

(2) The creation approach of the ink jet type platemaking printing version the above (1) that the double-sided coat resin of said waterproof base material is polyethylene, and a consistency consists of mixture with which a consistency contains the low density polyethylene for 1.0-30.0g / 10 minutes in a list ten to 90% of the weight, and 0.940-0.970g [cc] /and a melt index contain [0.915-0.930g / cc / /and a melt index] the high density polyethylene for 1.0-30.0g / 10 minutes ten to 90% of the weight.

(3) Said oily ink is electric resistance 109. The above (1) which distributes a solid-state and a hydrophobic resin particle in ordinary temperature at least in more than omegacm and a with a dielectric constant of 3.5 or less non-aqueous solvent, or the creation approach of the ink jet type platemaking printing version of (2).

[0008]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to a detail. In the image acceptance layer prepared on the waterproof base material, this invention is characterized by forming an image by the ink jet method which carries out the regurgitation of the oily ink by electrostatic field, and obtains the lithography version which can several multi-sheet print a clear image.

[0009] This waterproof base material is 50-200 micrometers. It is desirable to use the stencil which has thickness. 50 micrometers Reinforcement runs short in the following and it is 200 micrometers. If it exceeds, handling nature will fall. The thickness of the polyethylene resin covered is 5-50 micrometers. It is suitable. 5 micrometers The waterproofness over a stencil runs short in the following, and, on the other hand, it is 50 micrometers. Even if it thickens, the further waterproof improvement is not accepted but only serves as a cost rise. more -- desirable -- 10-30 micrometers it is .

[0010] On the other hand, although the ink jet method using oily ink is used for the thing of the disclosure to JP,54-117203,A like this invention, unlike this invention, the regurgitation of the ink is not carried out with a pressure, and a minute image is not obtained. Moreover, although the aluminum version for PS plates is used as an image acceptance object, the aluminum version is expensive and needs large-scale equipment also for handling again.

[0011] this invention -- setting -- the absorptivity of a waterproof base material -- the cop water-absorbing-capacity examining method -- setting -- 0.1 g/m² -- it is the following (45-minute value) -- desirable -- more -- desirable -- 0.05 g/m² -- it is the following (45-minute value). Although absorptivity should just be 0, the minimum is usually about two 0.001 g/m.

[0012] When it considers as above-mentioned [the water absorbing capacity of a waterproof base material] within the limits, osmosis in base materials, such as dampening water at the time of printing, is suppressed, and the print durability of 10,000 or more sheets is obtained, without producing the version elongation version piece. Cop water absorbing capacity is JIS here. It is indicated by P8140. 50ml [after a base puts a test piece between very smooth metal rings (area 6mm in 2 and height of 25mm of 100cm, thickness) and base plates and fully binds tight] distilled water -- endocyclic -- filling -- the water absorption weight to the test piece within fixed time amount -- measuring -- g/m² a table -- it is a thing the bottom. [The bore of 112.8mm;]

[0013] Furthermore, in this invention, image repeatability and print durability can be further raised by regulating the smooth nature of the front face of the side which adjoins the image acceptance layer of a base material with the Beck smoothness more than 300 (a second / ten cc). Even if such improvement effectiveness has the the same smooth nature of an image acceptance layer front face, it is acquired, and since the adhesion of the image section and an image acceptance layer improved because the smooth nature of a support surface increases, it is considered.

[0014] Here, with the Beck smoothness, it can measure with the Beck smoothness testing machine. A test piece is pushed by the constant pressure (1kg/cm²) on the circular glass plate which has a hole in the center to which altitude was made flat and smooth, and, as for the Beck smoothness testing machine, the air of a constant rate (ten cc) measures the time amount taken to pass through between a glass side and test pieces under reduced pressure.

[0015] Moreover, the oily ink used for this invention is electric resistance 109 preferably. More than omegacm and a with a dielectric constant of 3.5 or less non-aqueous solvent are made into a dispersion medium, and a solid-state and a hydrophobic resin particle are distributed in ordinary temperature (15 degrees C - 35 degrees C) at least. By using such a dispersion medium, the electric resistance of oily ink is controlled proper, and becomes proper [the regurgitation of the ink by electric field], and image quality improves. Moreover, since the base material which laminated polyethylene resin to both sides of the above stencils is excellent in a water resisting property, its print durability improves.

[0016] Furthermore, the creation approach of the ink jet type platemaking printing version of this invention is explained. First, the paper base material which covered with polyethylene resin both sides which are the waterproof base materials *(ed) by this invention is explained.

[0017] The above polyethylene is covered with the extrusion laminating method by both sides of a stencil, and this point is one description of this invention. By covering with this extrusion laminating method, it becomes possible to obtain the platemaking ingredient which can make the lithography version excellent in image quality and print durability for the first time. After the extrusion laminating method fuses polyolefine and makes this a film, it is the approach of cooling after being stuck to a stencil by pressure promptly, and laminating, and various equipments are known.

[0018] In this invention, by using the mixture of low density polyethylene and high density polyethylene as the polyethylene concerned, there is coat film homogeneity at the time of an extrusion lamination, and it found out that the polyethylene layer which was moreover excellent in thermal resistance was obtained.

[0019] In a low-density-polyethylene independent case, there is coat film homogeneity at the time of an extrusion lamination, but since the melting point is low, thermal resistance runs short, and the next failure is generated. That is, one is the drying temperature of 100 degrees C or more being needed, and a polyethylene layer's softening in that case, and adhering to a pass roll, in case an image acceptance layer's is applied, and in case another creates a lithographic plate, it is promoting generating of the swelling (blister) between the polyethylene layer and the stencil which a polyethylene layer's softens similarly and is produced by the volatile matter in a stencil (moisture) in the process which carries out heating fixation of the ink image. Since the coat film at the time of an extrusion lamination becomes uneven and adhesive variation with a stencil becomes large, it stops bearing an activity as a product on the other hand, although the above-mentioned failure is cancelable in a high-density-polyethylene independent case. Then, by blending both suitably, it is a reason for having found out that the above-mentioned trouble could be solved at once.

[0020] As the above-mentioned low density polyethylene, the consistency of 0.915-0.930g/cc and the thing for melt index;1.0-30g /, and 10 minutes are desirable, and the thing of consistency;0.940-0.970g/cc, and 10 melt index;1.0-30g /, and minutes is desirable as high density polyethylene. Since low density polyethylene extrudes at less than 10 % of the weight and thermal resistance with high density polyethylene sufficient at less than 10 % of the weight is not obtained impossible [a lamination that the coat film is uneven and normal] as a blend ratio, 10 - 90 % of the weight of consistency polyethylene and 90 - 10 % of the weight of high density polyethylene are desirable.

[0021] Thus, the thickness of the polyethylene layer to laminate is 5-50 micrometers. The range is suitable. 5 micrometers If it becomes thin, the waterproofness over a stencil becomes inadequate and, on the other hand, it is 50 micrometers. When it thickens, improvement on the engine performance beyond it cannot be desired any longer, but only serves as a cost rise. therefore, desirable thickness -- 10-30 micrometers it is .

[0022] In order to raise the adhesive strength of a stencil and the above-mentioned polyethylene layer, it is desirable to apply polyethylene derivatives, such as an ethylene-vinylacetate copolymer, an ethylene-acrylic ester copolymer, an ethylene-methacrylic ester copolymer, an ethylene-acrylic-acid copolymer, an ethylene-methacrylic-acid copolymer, an ethylene-acrylonitrile-acrylic-acid copolymer, and an ethylene-acrylonitrile-methacrylic-acid copolymer, on a stencil beforehand, or to carry out corona discharge treatment of the front face of a stencil. As an exception method, surface treatment indicated by each official report of JP,49-24126,A, 52-36176, 52-121683, 53-2612, 54-111331, and JP,51-25337,B

can also be performed to a stencil.

[0023] As a stencil with which the original edition of this invention is presented, the mixed papermaking of a wood paper, synthetic-pulp paper, a wood paper, and synthetic-pulp paper can be used as it is.

[0024] Although an image acceptance layer is prepared on the polyethylene lamination layer of this waterproof base material, since adhesive strength with an image acceptance layer will improve if surface treatment, such as corona discharge treatment, glow discharge processing, flame processing, ultraviolet treatment, ozonization, and plasma treatment, is performed as U.S. Pat. No. 3,411,908 indicates the front face of a polyethylene lamination layer beforehand, it is desirable. Thus, the thickness of the image acceptance layer prepared is 5-30 micrometers. The range is suitable.

[0025] As an image acceptance layer, the hydrophilic layer which consists of an inorganic pigment and a binder, or the layer to which hydrophilization becomes possible by desensitization processing can be used.

[0026] Clay, a silica, a calcium carbonate, a zinc oxide, an aluminum oxide, a barium sulfate, etc. can be used for the inorganic pigment used for the image acceptance layer of a hydrophilic property. Moreover, as a binder, hydrophilic binders, such as polyvinyl alcohol, starch, a carboxymethyl cellulose, hydroxyethyl cellulose, casein, gelatin, polyacrylate, a polyvinyl pyrrolidone, and a poly methyl ether-maleic-anhydride copolymer, can be used. Moreover, in order to give a water resisting property if needed, melamine formalin resin, urea formalin resin, and other cross linking agents may be added.

[0027] For example, the layer using a zinc oxide and a hydrophobic binder as an image acceptance layer which carries out desensitization processing on the other hand, and is used is raised.

[0028] the zinc oxide with which this invention is presented -- for example, Japanese pigment American Institute of Technology editing -- like a publication to "new edition pigment handbook" 319 page, *****, and (1968 annual publications), although marketed as a zinc oxide, a zinc white, a wet zinc white, or an active white, any are sufficient.

[0029] namely, a zinc oxide -- a start raw material and the manufacture approach -- as dry process -- an French method (indirect method) and the United States -- what is called law (direct method) and a wet method -- it is -- for example, Forward Anabolism Study, Sakai Chemistry, Hokusui Chemistry, and Honjo chemical -- Co., Ltd. -- what is marketed from each company, such as Toho Zinc Co., Ltd. and Mitsui Mining & Smelting Industry, is mentioned.

[0030] Moreover, specifically, a vinyl chloride vinyl acetate copolymer, a styrene-butadiene copolymer, a styrene-methacrylate copolymer, a methacrylate copolymer, an acrylate copolymer, a vinyl acetate copolymer, polyvinyl petir RARU, alkyd resin, an epoxy resin, epoxy ester resin, polyester resin, polyurethane resin, etc. are mentioned as resin used as a binder. These resin may be used independently and may use two or more sorts together.

[0031] As for the content of the resin in an image acceptance layer, it is desirable for the weight ratio of resin/zinc oxide to show, and to be referred to as 9 / 91 - 20/80.

[0032] As for the desensitization of a zinc oxide, the processing liquid which used as the principal component the inorganic acid or organic acid which forms the cyanogen free processing liquid and the zinc ion which used as the principal component the cyanide compound content processing liquid which uses ferrocyanide salt and a ferry cyanogen salt as a principal component, an ammine cobalt complex, phytic acid and its derivative, and a guanidine derivative, and a chelate, or the processing liquid containing a water-soluble polymer is conventionally known as this kind of desensitization processing liquid.

[0033] For example, the thing of a publication is mentioned to JP,44-9045,B, 46-39403, JP,52-76101,A, 57-107889, 54-117201, etc. as cyanide compound content processing liquid.

[0034] The oily ink used for this invention below is explained. The oily ink with which this invention is presented is electric resistance 109. It comes to distribute a solid-state and a hydrophobic resin particle in ordinary temperature in more than omegacm and a with a dielectric constant of 3.5 or less non-aqueous solvent at least.

[0035] Electric resistance 109 used for this invention There is a halogenation object of the aliphatic hydrocarbon of the shape of a straight chain and the letter of branching, alicyclic hydrocarbon or

aromatic hydrocarbon, and these hydrocarbons preferably as a with more than omegacm and a dielectric constant of 3.5 or less non-aqueous solvent. for example, independent in octane, isooctane, Deccan, iso decane, decalin, nonane, dodecane, iso dodecane, cyclohexane, cyclooctane, cyclo decane, benzene, toluene, xylene, mesitylene, Isopar E, Isopar G, Isopar H, Isopar L (Isopar: trade name of Exxon company), shell ZORU 70, shell ZORU 71 (shell ZORU: trade name of shell oil company), AMUSUKO OMS, and AMUSUKO 460 solvent (AMUSUKO: trade name of a spirits company) etc. -- or it mixes and uses. In addition, the upper limit of the electric resistance of such a non-aqueous solvent is about 1016ohmcm, and the lower limit of a dielectric constant is about 1.9.

[0036] Make the electric resistance of the non-aqueous solvent to be used into the above-mentioned range because the electric resistance of ink will not become proper but the regurgitation of the ink by electric field will worsen, if electric resistance becomes low, and let a dielectric constant be the above-mentioned range because electric field will become are easy to be eased in ink and the regurgitation of ink will become easy to worsen by this, if a dielectric constant becomes high.

[0037] In the above-mentioned non-aqueous solvent, as a resin particle distributed Although what is necessary is just the particle of hydrophobic resin with sufficient compatibility with a non-aqueous solvent in solid form at the temperature of 35 degrees C or less Furthermore, the resin (P) the glass transition point of whose is -5 degrees C - 110 degrees C or 33 degrees C - 140 degrees C of softening temperatures is desirable. It is 10 degrees C - 100 degrees C of glass transition points, and 38 degrees C - 120 degrees C more preferably, and they are 15 degrees C - 80 degrees C of glass transition points, and 38 degrees C - 100 degrees C of softening temperatures still more preferably.

[0038] Since association of the increase of the compatibility of the image acceptance layer front face of the printing original edition and a resin particle and the resin particles on the printing original edition becomes less strong by using the resin of such a glass transition point or softening temperature, the adhesion of the image section and an image acceptance layer improves, and print durability improves. On the other hand, even if a glass transition point or softening temperature becomes low and it becomes high, the compatibility of an image acceptance layer front face and a resin particle will fall, or association of resin particles will become weak.

[0039] the weight average molecular weight Mw of resin (P) -- 1×10^3 to 1×10^6 it is -- desirable -- 5×10^3 to 8×10^5 -- more -- desirable -- 1×10^4 to 5×10^5 it is .

[0040] as such resin (P) -- concrete -- an olefin polymer and a copolymer (for example, polyethylene --) Polypropylene, a polyisobutylene, an ethylene-vinylacetate copolymer, An ethylene-acrylate copolymer, an ethylene-methacrylate copolymer, Vinyl chloride copolymers, such as an ethylene-methacrylic-acid copolymer For example, (a polyvinyl chloride, a vinyl chloride vinyl acetate copolymer), etc., A vinylidene-chloride copolymer, an alkane acid vinyl polymerization object, and a copolymer, the polymer of an alkane acid allyl compound polymer and a copolymer, styrene, and its derivative, and a copolymer (for example, Butadiene Styrene --) An iso BUREN-styrene copolymer, a styrene-methacrylate copolymer, Acrylonitrile copolymers, such as a styrene-acrylate copolymer, A methacrylonitrile copolymer, an alkyl vinyl ether copolymer, an acrylic ester polymer, and a copolymer, A methacrylic ester polymer and a copolymer, an itaconic-acid diester polymer, and a copolymer, A maleic-anhydride copolymer, an acrylamide copolymer, a methacrylamide copolymer, Phenol resin, alkyd resin, polycarbonate resin, ketone resin, Polyester resin, silicon resin, amide resin, a hydroxyl group, and carboxyl group denaturation polyester ETERU resin, Butyral resin, polyvinyl-acetal resin, urethane resin, rosin system resin, Hydrogenation rosin resin, petroleum resin, hydrogenation petroleum resin, maleic resin, Terpene resin, hydrogenation terpene resin, chroman-indene resin, a cyclized-rubber-methacrylic ester copolymer, A cyclized-rubber-acrylic ester copolymer, the copolymer containing the heterocycle which does not contain a nitrogen atom (it considers as heterocycle) Epoxy resins, such as furan ring, tetra-FUDORO furan ring, thiophene ring, dioxane ring, dioxa furan ring, lactone ring, benzofuran ring, benzothiophene ring, 1, and 3-JIOKI cetane ring, etc. are mentioned.

[0041] As for the content of the distributed resin particle in the oily ink of this invention, it is desirable to carry out to 0.5 - 20wt% of the whole ink. The compatibility of ink and the image acceptance layer of the printing original edition becomes will be hard to be acquired if a content decreases, and it becomes

easy to produce the problem of a good image no longer being obtained or print durability falling, and on the other hand, when a content increases, that uniform dispersion liquid are hard to be obtained, it becomes, or is easy to be generated in the blinding of the ink in a discharge head, and problems -- the stable ink regurgitation is hard to be obtained -- are.

[0042] It is desirable to make color material contain as a coloring component in the oily ink with which this invention is presented for carrying out the ** version of the version after platemaking with the aforementioned distributed resin particle etc.

[0043] Which is usable if it is the pigment and color which are used for the liquid development agent for an oily ink constituent or electrostatic photographs from the former as a color material.

[0044] As a pigment, an inorganic pigment and an organic pigment cannot be asked but what is generally used by the technical field of printing can be used. It can use without specifically limiting especially a pigment with conventionally well-known carbon black, cadmium red, molybdate red, chrome yellow, cadmium yellow, titan yellow, chromic oxide, kinky thread JIAN, titanium cobalt green, ultra marine blue, bull cyanogen blue, cobalt blue, an azo system pigment, a phthalocyanine system pigment, the Quinacridone system pigment, an isoindolinone system pigment, a dioxazine system pigment, the Indanthrene system pigment, a perylene system pigment, a peri non system pigment, a thioindigo system pigment, a kino FUTARON system pigment, a metal complex pigment, etc.

[0045] As a color, oil colors, such as azo dye, metal complex dye, naphthol dye, anthraquinone dye, an indigo color, a carbonium pigment, a quinonimine dye, a KISANDEN color, cyanine dye, quinoline dye, nitro dye, nitroso dye, a benzoquinone color, a naphthoquinone color, phthalocyanine dye, and metal phthalocyanine dye, are desirable.

[0046] Although it is also possible to use these pigments and colors independently, and to use it, combining suitably, it is desirable to contain in 0.01 - 5% of the weight of the range to the whole ink.

[0047] You may make it distribute in a non-aqueous solvent by making the color material itself into a particulate material apart from a distributed resin particle, and such color material may be made to contain in a distributed resin particle. When making it contain, the approach of a pigment of covering with the resin ingredient of a distributed resin particle, and making it into a resin coated particle etc. is common, and the approach of a color of coloring the surface section of a distributed resin particle and making it into a coloring particle etc. is common.

[0048] the resin particle distributed in the non-aqueous solvent of this invention -- further -- a coloring particle etc. -- including -- the mean particle diameter of these particles -- 0.05 micrometers - 5 micrometers is desirable. It is 0.1 micrometers - 1.0 micrometers more preferably, and is the range of 0.1 micrometers - 0.5 micrometers still more preferably. It asks for this particle size by CAPA-500 (trade name by Horiba, Ltd.).

[0049] The nonaqueous distribution resin particle used for this invention can be conventionally manufactured by the well-known mechanical grinding approach or the polymerization granulation approach. As the mechanical grinding approach, if needed, mix the ingredient made into a resin particle and a well-known grinder grinds directly conventionally through melting and kneading. The approach of considering as a particle, using a distributed polymer together, and distributing further by wet dispersers (for example, a ball mill paint shaker, KEDEIMIRU, eye NOMIRU, etc.), and the ingredient used as a resin particle component, It grinds, after kneading a distributed auxiliary polymer (or coat polymer) beforehand and considering as a kneading object, and the approach of making a distributed polymer live together next and distributing etc. is mentioned. concrete -- the manufacture approach of a coating or the liquid development agent for electrostatic photographs -- it can use -- these -- for example -- the fundamental science of Kenji Ueki supervision-of-translation ("floating and pigment-content powder" of coating) KYORITSU SHUPPAN (1971), and "science of Solomon and coating" "Paint and SurfaceCoating Theory and Practice" Harasaki [Yuji] "coding engineering" Asakura Publishing (1971), and Yuji Harasaki "coding -- " -- It is indicated by compendiums, such as a bookstore (1977).

[0050] As a polymerization coming method, a well-known nonaqueous distribution polymerization method is mentioned conventionally. Moreover, specifically CMC publication (1991) of Chapter 2 Soichi Muroi editorial supervision "the latest technique of an ultrafine particle polymer" -- the volume

("development and utilization" of the latest electrophotography development system and a toner ingredient) for Koichi Nakamura -- Chapter 3 (Japanese Science-information 1985 annual-publications) KE.J.Barrett It is indicated by the compendium (1975) of "Dispersion Polymerization in Organic Media" John Wiley etc.

[0051] Usually, a distributed polymer is used together in order to carry out distributed stabilization of the particulate material in a non-aqueous solvent. A distributed polymer contains the repeat unit of fusibility as a principal component in a non-aqueous solvent, and average molecular weight is 1×10^3 to 1×10^6 at weight average molecular weight Mw. It is 5×10^3 to 5×10^5 preferably and more preferably. It is the range.

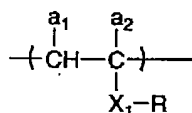
[0052] As a repeat unit of the desirable fusibility of the distributed polymer with which this invention is presented, the polymerization component shown by the following general formula (I) is mentioned.

General formula (I)

[0053]

[Formula 1]

一般式(I)



[0054] It sets to a general formula (I) and is X1. -COO-, -OCO-, or -O- is expressed.

[0055] You may have the substituent, although R expresses the alkyl group or alkenyl radical of carbon numbers 10-32, the alkyl group or alkenyl radical of carbon numbers 10-22; is expressed preferably, the shape of a straight chain and the letter of branching are sufficient as these and a non-permuted thing is desirable.

[0056] Specifically, a decyl group, the dodecyl, a tridecyl radical, a tetradecyl radical, a hexadecyl radical, an octadecyl radical, an eicosanyl radical, a docosa nil radical, a decenyl radical, a dodecenyl radical, a tridecenyl radical, a hexa decenyl radical, an octadecenyl radical, a RINORERU radical, etc. are mentioned.

[0057] a1 And a2 even when it is mutually the same -- differing -- **** -- desirable -- a hydrogen atom - Halogen atoms (for example, a chlorine atom, a bromine atom, etc.), a cyano group, the alkyl group of carbon numbers 1-3 (Methyl group, ethyl group, propyl group, etc. and -) COO-Z1 Or -CH2 COO-Z1 [Z1 [for example,]] showing a hydrogen atom or the with a carbon number of 22 or less hydrocarbon groups (for example, an alkyl group, an alkenyl radical, an aralkyl radical, an alicyclic radical, an aryl group, etc.) which may be permuted is expressed.

[0058] Z1 A hydrocarbon group besides a hydrogen atom is specifically expressed. As a desirable hydrocarbon group the alkyl group (for example, a methyl group --) by which carbon numbers 1-22 may be permuted An ethyl group, a propyl group, butyl, a HEBUCHIRU radical, a hexyl group, an octyl radical, A nonyl radical, a decyl group, the dodecyl, a tridecyl radical, a tetradecyl radical, A hexadecyl radical, an octadecyl radical, an eicosanyl radical, a docosa nil radical, 2-chloro ethyl group, 2-BUROMO ethyl group, 2-cyano ethyl group, 2-methoxy carbonylethyl radical, Alkenyl radicals by which carbon numbers 4-18 may be permuted, such as 2-methoxy ethyl group and 3-BUROMO propyl group for example, a 2-methyl-1-propenyl radical, 2-butenyl group, and 2-pentenyl radical -- A 3-methyl-2-pentenyl radical, 1-pentenyl radical, a 1-hexenyl radical, A 2-hexenyl radical, a 4-methyl-2-hexenyl radical, a decenyl radical, a dodecenyl radical, A tridecenyl radical, a hexa decenyl radical, an octadecenyl radical, a RINORERU radical, etc., the aralkyl radical (for example, benzyl --) by which carbon numbers 7-12 may be permuted A phenethyl radical, 3-phenylpropyl radical, a naphthyl methyl group, 2-naphthyl ethyl group, Chloro benzyl, promo benzyl, a methylbenzyl radical, ethyl benzyl, A methoxybenzyl radical, a dimethylbenzyl radical, dimethoxy benzyl, etc., the alicyclic radical (for example, a cyclohexyl radical --) by which carbon numbers 5-8 may be permuted Aromatic series radicals by which carbon numbers 6-12 may be permuted, such as 2-cyclohexyl ethyl group and 2-

cyclopentyl ethyl group for example, a phenyl group, a naphthyl group, a tolyl group, a xylyl group, and a propyl phenyl group -- A buthylphenyl radical, an octyl phenyl group, a dodecyl phenyl group, a methoxyphenyl radical, An ethoxy phenyl group, a butoxy phenyl group, a decyloxy phenyl group, A chlorophenyl radical, a dichlorophenyl radical, a BUROMO phenyl group, a cyanophenyl radical, An acetyl phenyl group, a methoxycarbonyl phenyl group, an ethoxycarbonyl phenyl group, a butoxycarbonyl phenyl group, an acetamide phenyl group, a PUROPIO amide phenyl group, a DODESHI roil amide phenyl group, etc. are mentioned.

[0059] With the repeat unit shown by the general formula (I) in a distributed polymer, other repeat units may be contained as a copolymerization component. Which compound is sufficient as long as it consists of the monomer and the monomer which can be copolymerized which corresponds per repeat of a general formula (I) as other copolymerization components.

[0060] The abundance of the polymer component shown by the general formula (I) in a distributed polymer is 50 % of the weight or more preferably, and is 60 % of the weight or more more preferably.

[0061] As an example of these distributed polymers, the resin for distributed stability (Q-1) currently used in the example is mentioned, and a commercial item (Solpren 1205: Asahi Chemical Co., Ltd. make) can also be used.

[0062] When manufacturing the aforementioned resin (P) particle as an emulsification object (latex) etc., as for a distributed polymer, it is desirable to add beforehand on the occasion of a polymerization.

[0063] The addition when using a distributed polymer is made into about 0.05-4wt% to the whole ink.

[0064] The distributed resin particle and coloring particle (or color-material particle) in the oily ink of this invention are an electroscopic nature particle of forward electrification or negative electrification preferably.

[0065] In order to give electroscopic nature to these particles, the technique of the developer for wet electrostatic photographs can be attained by using suitably. concrete -- the aforementioned "development [of the latest electrophotography development system and a toner ingredient] / utilization" 139-148 page, and the edited by Society of Electrophotography of Japan -- it is carried out by using the electroscopic ingredient and other additives of a publication for "foundation [of electrophotographic technology], and application" 497-505 page (Corona Publishing, 1988 annual publications), Yuji Harasaki "electrophotography" 16 (No.2), 44 etc. pages (1977), etc.

[0066] Specifically, it is indicated by the British patent No. 893429, 934038, U.S. Pat. No. 1122397, 3900412, 4606989, JP,60-179751,A, 60-185963, JP,2-13965,A, etc.

[0067] The above electrification modifiers have the desirable 0.001 - 1.0 weight section to the dispersion-medium 1000 weight section which is a support liquid. Furthermore, various additives may be added by request and, as for the total amount of these additives, the upper limit is regulated by the electric resistance of oily ink. That is, the electric resistance of the ink in the condition of having removed the particulate material is 109. Since a good continuous tone image will become is hard to be obtained if it becomes lower than omegacm, it is required to control the addition of each additive within this limit.

[0068] Next, how to form an image on the above mentioned lithography original edition (for it to also be called a "master" below) is explained. There are some which are shown in drawing 1 as an equipment system which enforces such an approach.

[0069] The equipment system shown in drawing 1 has the ink jet recording device 1 which uses oily ink.

[0070] Like drawing 1 , the pattern information on the image (a graphic form and text) which should be formed in a master 2 is first supplied to the ink jet recording device 1 which uses through and oily ink for a means of communication like pass 4 from an information supply source like a computer 3. The head 10 for ink jet record of a recording apparatus 1 will spray the very small drop of ink on a master 2 according to said information, if oily ink is stored in the interior and a master 2 passes in a recording apparatus 1. Thereby, ink adheres to a master 2 by said pattern.

[0071] In this way, forming an image in a master 2 is finished and a platemaking master (platemaking printing original edition) is obtained.

[0072] The example of a configuration of an ink jet recording device [as / in the equipment system of drawing 1] is shown in drawing 2 and drawing 3 . Drawing 2 and drawing 3 show the member which is common in drawing 1 using the common sign.

[0073] Drawing 2 is the outline block diagram showing the important section of such an ink jet recording device, and drawing 3 is the fragmentary sectional view of a head.

[0074] As shown in drawing 2 and drawing 3 , the head 10 with which the ink jet recording device is equipped has the slit pinched in the up unit 101 and the lower unit 102, the head is regurgitation slit 10a, discharge electrode 10b is arranged in a slit, and oily ink 11 will be filled in the slit by it.

[0075] With a head 10, an electrical potential difference is impressed to discharge electrode 10b according to the digital signal of the pattern information on an image. As shown in drawing 2 , counterelectrode 10c is installed in the form which counters discharge electrode 10b, and the master 2 is formed on counterelectrode 10c. An image is formed on the master 2 which the circuit was formed between discharge electrode 10b and counterelectrode 10c of impression of an electrical potential difference, and oily ink 11 was breathed out from regurgitation slit 10a of a head 10, and was prepared in counterelectrode 10c.

[0076] In order that the width of face of discharge electrode 10b may perform high-definition image formation, for example, printing, the thing narrow as much as possible of the head is desirable.

[0077] For example, printing of the dot of 40um(s) can be formed on a master 2 by filling oily ink on the head 10 of drawing 3 , and a head setting spacing of discharge electrode 10b and counterelectrode 10c to 1.5mm using discharge electrode 10b of 20-micrometer width of face, and impressing the electrical potential difference of 3kV to inter-electrode [this] 0.1 mses.

[0078]

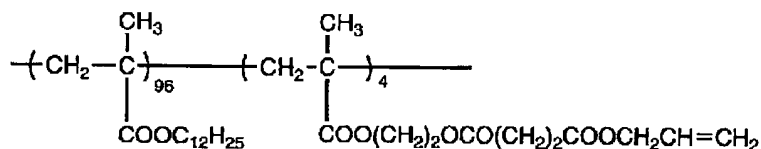
[Example] Although an example is shown below and this invention is explained to a detail, the content of this invention is not limited to these. First, the example of manufacture of the resin particle for ink (PL) is shown.

It warmed in temperature of 70 degrees C, agitating 10g (Q-1) of resin for distributed stability of the manufacture following structure of an example of manufacture 1 resin particle (PL-1), 100g of vinyl acetate, and an eye SOBA H384g mixed solution under a nitrogen air current. 2 and 2'-azobis (iso valeronitrile) (abbreviated-name A.I.V.N.) 0.8g was added as a polymerization initiator, and it reacted for 3 hours. Producing nebula, 20 minutes after adding an initiator, reaction temperature rose to 88 degrees C. Furthermore, after adding 0.5g of this initiator and reacting for 2 hours, temperature was agitated at 100 degrees C for raising 2 hours, and unreacted vinyl acetate was distilled off. Through and the obtained white distribution object were latexes with mono dispersion nature with a mean particle diameter of 0.23 micrometers good at 90% of conversion about the nylon cloth of 200 meshes after cooling. Particle size was measured by CAPA-500 (Horiba, Ltd. make).

[0079]

[Formula 2]

分散安定用樹脂(Q-1)



Mw 5X10⁴

(数値は重量比)

[0080] Uptake and desiccation of a part for the resin particle which sedimented were done having covered some above-mentioned white distribution objects over the centrifugal separator (rotational frequency 1x104 r.p.m. turnover time 60 minutes). 2x105 and the glass transition point (Tg) of the weight average molecular weight for a resin particle (Mw: polystyrene conversion GPC value) were 38 degrees C.

[0081] Example 1 basis-weight 100 g/m2 It is 5% water solution of a calcium chloride to paper of fine

quality 20 g/m² It dried and the conductive stencil was obtained, after applying. The amount of desiccation coats is the aqueous latex of an ethylene-methyl-acrylate-acrylic-acid copolymer (mole ratio 65:30:5) to these both sides 0.2 g/m² After applying and drying so that it may become, Consistency [of 0.920g/cc], and melt index 5.0g/low-density-polyethylene 70wt% of 10 minutes The consistency of 0.950g/cc, and melt index 8.0g/high-density-polyethylene 1.5wt% of 10 minutes And conductive carbon 15wt% It extrudes using the pellet which carried out fusion kneading. By law It is 25 micrometers respectively to both sides of a stencil. The base material of this invention which laminates by thickness and has the thickness of a uniform polyethylene layer was obtained.

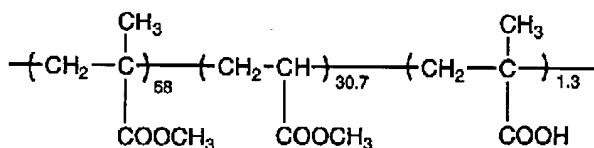
[0082] This base material is called the waterproof base material 1 below. 0.01 g/m² (45-minute value) and the Beck smoothness of the cop water absorbing capacity of this waterproof base material 1 front face were 1,500 seconds / ten cc.

[0083] Subsequently, it is the front face of the polyethylene layer of one side of this base material 5 KVA-sec/m² Corona discharge treatment is carried out on conditions, and the amount of desiccation coats is coating liquid of the following presentation on this 15 g/m² It applied and dried and the image acceptance layer was prepared so that it might become. Even if it dried for 1 minute in the drying temperature of 100 degrees C, the adhesion failure to the pass roll by softening of a polyethylene layer was not generated.

[0084] An image acceptance layer, 100g of coating liquid oxidation-in-the-gas-phase zinc, 3.0g (B-1) of binding resin of the following structure, 17.0g (B-2) of binding resin, 0.15g of benzoic acids, and toluene 155g mixture were distributed for 3 minutes by rotational frequency 6x10³ rpm using the wet disperser homogenizer (NIPPON SEIKI CO., LTD. make). Thus, the obtained original edition for printing was made into the sample 1.

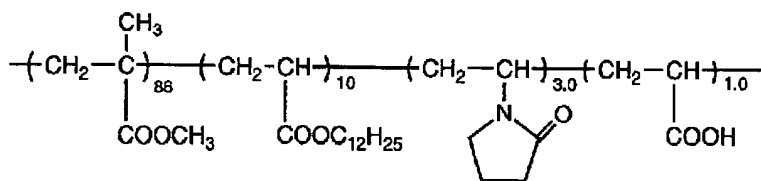
[0085]

[Formula 3]
結着樹脂 (B-1)



Mw 9X10³

結着樹脂 (B-2)



Mw4X10⁴ (数值は重量比)

[0086] They are 5 KVA-sec/m² to both sides of the stencil used in the example 2 example 1. Under conditions corona discharge treatment After *****, The consistency of 0.925g/cc, the low density polyethylene of 15% and the consistency of 0.955g/cc for melt index 3.0g / 10 minutes, The base material of this invention which extrudes melt index 15.0g / 70% [of high density polyethylene for 10 minutes], and conductive carbon 15% using the pellet which carried out fusion kneading, laminates by the thickness of 25 micrometers respectively to both sides of a stencil by law, and has the thickness of a uniform polyethylene layer was obtained.

[0087] This base material is called the waterproof base material 2 below. 0.01 g/m² (45-minute value) and the Beck smoothness of the cop water absorbing capacity of this waterproof base material 2 front face were 1,500 seconds / ten cc. Subsequently, corona discharge treatment of one side of a polyethylene

layer was carried out like the case of an example 1, and the same image acceptance layer as a sample 1 was prepared. When carrying out spreading desiccation of the image acceptance layer, adhesion failure was not generated between the polyethylene layer and the pass roll. Thus, the obtained original edition for printing was made into the sample 2.

[0088] It is basis weight 100 g/m² as example of comparison 1 base. Using paper of fine quality, the coating for undershirt layers of the following presentation is applied to one field of a base using a wire bar, and it is desiccation coverage 10 g/m². The undershirt layer was prepared. The smoothness of an undershirt layer front face is 150 seconds / ten cc, and prepared smoothness to 1500 (a second / ten cc) by calender processing. Cop water absorbing capacity was 2 g/m² (45-minute value).

[0089]

<Coating for undershirt layers> - silica gel Ten weight sections -SBR latex (a 50-% of the weight water dispersion, Tg25 degree C) 92 weight sections - clay (45-% of the weight water dispersion) The 110 weight sections - melamine (80-% of the weight water solution) Five weight sections - water The 191 weight sections [0090] Furthermore, the coating for back coat layers of the following presentation is applied to the field of another side of a base using a wire bar, and it is desiccation coverage 12 g/m². After preparing a back coat layer, calender conditions were set up and calender processing was performed so that the smoothness of a back coat layer might turn into 50 (a second / ten cc) extent. Cop water absorbing capacity was 5 g/m² (45-minute value).

[0091]

<Coating for back coat layers> - kaolin (50% water dispersion) The 200 weight sections - polyvinyl alcohol water solution (10%) 60 weight sections -SBR latex (49% of solid content, Tg0 degree C) The 100 weight sections Initial condensate of - melamine resin Five weight sections (80% of solid content, SUMIRETTSU resin SR-613)

[0092] This base material is called the waterproof base material 3 below. The same image acceptance layer as examples 1 and 2 was prepared in the undershirt layer front face of this waterproof base material 3. Thus, the obtained original edition for printing was made into the sample 3.

[0093] Servo PUROTA DA 8400 by the graph deck company which can draw a personal computer output be converted using sample No.1-No.3 of the original edition for lithography created as mentioned above, and the pen plotter section be equipped with the ink discharge head showed in drawing 2, and the oily ink (IK-1) of the following content be used for the original edition for lithography installed on the counterelectrode which set spacing of 1.5mm, and it printed and engraved.

[0094] <Oily ink (IK-1)> dodecyl methacrylate / acrylic-acid copolymer (copolymerization ratio: 95/5-fold quantitative ratio) was put into the paint shaker (Tokyo Seiki Co., Ltd. make) with the glass bead, 10g, Nigrosine 10g, and 30g of shell ZORU 71 were distributed for it for 4 hours, and the very small distributed object of Nigrosine was obtained.

[0095] Black oiliness ink was created by diluting 2.5g, FOC-1400 (product [made from Nissan Chemistry], tetradecyl alcohol) 15g, and 0.08g of octadecene-half maleic-acid octadecyl amide copolymers for 6g (PL-1) (as a solid-state daily dose) of resin particles of the example 1 of manufacture of the resin particle for ink, and the above-mentioned Nigrosine distribution object to 1l. of Isopar G.

[0096] Next, after engraving as mentioned above, desensitization processing liquid (ELP-EZ: Fuji Photo Film trade name) was put into the etcher section of a full automatic printing machine (AM-2850, trade name made from EEMU), the solution which diluted desensitization processing liquid (SICS) with distilled water 4 times was put into the dampening water carrier tray as dampening water, and it printed through the platemaking object using the Japanese ink ink for offset printing to the printing machine. Assessment of print durability was made into printing number of sheets until lack of an image can distinguish visually.

[0097]

Assessment result 1 Sample NO Base material smoothness Base material cop water absorbing capacity The number of *-proof sheets (A second / ten cc) (g/m² 45-minute value) 1 (this invention) 1500 0.01 15,000 2 (this invention) 1500 0.01 15,000 3 (example of a comparison) 1500 Surface 2.0 rear face 5.0 3,000 [0098] The cop water absorbing capacity of a base material of the number of *-proof sheets is

** -proof [quantity] with 0.01 and few samples 1 and 2 as greatly as 1 and 5000. The sample 3 with as much cop water absorbing capacity mentioned as the example of a comparison on the other hand as [2.0-5.0] has 3,000 and low print durability. This is considered that are that a base material absorbs water and produced swelling or elongation, and the image acceptance layer deformed as a result, or separated from the base material and it resulted during printing at lack of an image.

[0099] Example They are 6 g/m², using the dispersion liquid of the following presentation in 4, 5, and the 6 aforementioned base materials 1, 2, and 3 as the coverage after desiccation. The image acceptance layer was prepared and it considered as samples 4, 5, and 6, respectively so that it might become.

Gelatin (Wako Pure Chem first class goods) 3g Colloidal silica 20g (the product made from the Nissan chemistry; Snow tech R-503 or 20% water solution) Silica gel (the product made from the Fuji SHIRISHIA chemistry; SAIRISHIA 310) 7g Hardening agent 0.4g Distilled water The paint shaker distributed 100g for 10 minutes with glass and a bead. It printed and engraved using oily ink (IK-1) about the original edition samples 4, 5, and 6 for lithography as well as samples 1, 2, and 3.

[0100] Next, these were printed with the full automatic printing machine (AM-2850) after platemaking, without performing desensitization processing. Dampening water used distilled water and ink used the Japanese ink ink for offset printing.

[0101]

Assessment result 2 Sample NO Base material smoothness Base material cop water absorbing capacity
The number of ** -proof sheets (A second / ten cc) (g/m² 45-minute value) 4 (this invention) 1500 0.01 10,000 5 (this invention) 1500 0.01 10,000 6 (example of a comparison) 1500 surface 2.0 rear face 5.0
The number of ** -proof [2,000] sheets is ** -proof [quantity] far compared with 2,000 of the sample 6 with as much cop water absorbing capacity to the cop water absorbing capacity of a base material mentioned as 10,000 and the example of a comparison with few samples 4 and 5 with 0.01 as [2.0-5.0].

[0102]

[Effect of the Invention] According to this invention, the printing version which the print of a clear image was obtained and was excellent in print durability can be created.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] The platemaking image quality and printing image quality of this invention which used oily ink for the detail further about the creation approach of the lithography version of having used the ink jet recording method are good, and it is related with the creation approach of the ink jet type platemaking printing version of excelling in print durability.

[Translation done.]

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MEANS

[Means for Solving the Problem] The above-mentioned object is attained by this invention of following the (1) - (3).

- (1) The creation approach of the ink-jet type platemaking printing version characterized by to use the paper base material which covered both sides with resin as said waterproof base material in the creation approach of the ink jet type platemaking printing version which oily ink is made to breathe out on a waterproof base material using electrostatic field, and forms an image by the ink-jet method on on the image acceptance layer of the original edition for lithography which has an image acceptance layer.
- (2) The creation approach of the ink jet type platemaking printing version the above (1) that the double-sided coat resin of said waterproof base material is polyethylene, and a consistency consists of mixture with which a consistency contains the low density polyethylene for 1.0-30.0g / 10 minutes in a list ten to 90% of the weight, and 0.940-0.970g [cc] /and a melt index contain [0.915-0.930g / cc] /and a melt index] the high density polyethylene for 1.0-30.0g / 10 minutes ten to 90% of the weight.
- (3) Said oily ink is electric resistance 10⁹. The above (1) which distributes a solid-state and a hydrophobic resin particle in ordinary temperature at least in more than omegacm and a with a dielectric constant of 3.5 or less non-aqueous solvent, or the creation approach of the ink jet type platemaking printing version of (2).

[0008]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to a detail. In the image acceptance layer prepared on the waterproof base material, this invention is characterized by forming an image by the ink jet method which carries out the regurgitation of the oily ink by electrostatic field, and obtains the lithography version which can several multi-sheet print a clear image.

[0009] This waterproof base material is 50-200 micrometers. It is desirable to use the stencil which has thickness. 50 micrometers Reinforcement runs short in the following and it is 200 micrometers. If it exceeds, handling nature will fall. The thickness of the polyethylene resin covered is 5-50 micrometers. It is suitable. 5 micrometers The waterproofness over a stencil runs short in the following, and, on the other hand, it is 50 micrometers. Even if it thickens, the further waterproof improvement is not accepted but only serves as a cost rise. more -- desirable -- 10-30 micrometers it is .

[0010] On the other hand, although the ink jet method using oily ink is used for the thing of the disclosure to JP,54-117203,A like this invention, unlike this invention, the regurgitation of the ink is not carried out with a pressure, and a minute image is not obtained. Moreover, although the aluminum version for PS plates is used as an image acceptance object, the aluminum version is expensive and needs large-scale equipment also for handling again.

[0011] this invention -- setting -- the absorptivity of a waterproof base material -- the cop water-absorbing-capacity examining method -- setting -- 0.1 g/m² -- it is the following (45-minute value) -- desirable -- more -- desirable -- 0.05 g/m² -- it is the following (45-minute value). Although absorptivity should just be 0, the minimum is usually about two 0.001 g/m.

[0012] When it considers as above-mentioned [the water absorbing capacity of a waterproof base

material] within the limits, osmosis in base materials, such as dampening water at the time of printing, is suppressed, and the print durability of 10,000 or more sheets is obtained, without producing the version elongation version piece. Cop water absorbing capacity is JIS here. It is indicated by P8140. 50ml [after a base puts a test piece between very smooth metal rings (area 6mm in 2 and height of 25mm of 100cm, thickness) and base plates and fully binds tight] distilled water -- endocyclic -- filling -- the water absorption weight to the test piece within fixed time amount -- measuring -- g/m² a table -- it is a thing the bottom. [The bore of 112.8mm;]

[0013] Furthermore, in this invention, image repeatability and print durability can be further raised by regulating the smooth nature of the front face of the side which adjoins the image acceptance layer of a base material with the Beck smoothness more than 300 (a second / ten cc). Even if such improvement effectiveness has the the same smooth nature of an image acceptance layer front face, it is acquired, and since the adhesion of the image section and an image acceptance layer improved because the smooth nature of a support surface increases, it is considered.

[0014] Here, with the Beck smoothness, it can measure with the Beck smoothness testing machine. A test piece is pushed by the constant pressure (1kg/cm²) on the circular glass plate which has a hole in the center to which altitude was made flat and smooth, and, as for the Beck smoothness testing machine, the air of a constant rate (ten cc) measures the time amount taken to pass through between a glass side and test pieces under reduced pressure.

[0015] Moreover, the oily ink used for this invention is electric resistance 109 preferably. More than omegacm and a with a dielectric constant of 3.5 or less non-aqueous solvent are made into a dispersion medium, and a solid-state and a hydrophobic resin particle are distributed in ordinary temperature (15 degrees C - 35 degrees C) at least. By using such a dispersion medium, the electric resistance of oily ink is controlled proper, and becomes proper [the regurgitation of the ink by electric field], and image quality improves. Moreover, since the base material which laminated polyethylene resin to both sides of the above stencils is excellent in a water resisting property, its print durability improves.

[0016] Furthermore, the creation approach of the ink jet type platemaking printing version of this invention is explained. First, the paper base material which covered with polyethylene resin both sides which are the waterproof base materials *(ed) by this invention is explained.

[0017] The above polyethylene is covered with the extrusion laminating method by both sides of a stencil, and this point is one description of this invention. By covering with this extrusion laminating method, it becomes possible to obtain the platemaking ingredient which can make the lithography version excellent in image quality and print durability for the first time. After the extrusion laminating method fuses polyolefine and makes this a film, it is the approach of cooling after being stuck to a stencil by pressure promptly, and laminating, and various equipments are known.
 [0018] In this invention, by using the mixture of low density polyethylene and high density polyethylene as the polyethylene concerned, there is coat film homogeneity at the time of an extrusion lamination, and it found out that the polyethylene layer which was moreover excellent in thermal resistance was obtained.

[0019] In a low-density-polyethylene independent case, there is coat film homogeneity at the time of an extrusion lamination, but since the melting point is low, thermal resistance runs short, and the next failure is generated. That is, one is the drying temperature of 100 degrees C or more being needed, and a polyethylene layer's softening in that case, and adhering to a pass roll, in case an image acceptance layer's is applied, and in case another creates a lithographic plate, it is promoting generating of the swelling (blister) between the polyethylene layer and the stencil which a polyethylene layer's softens similarly and is produced by the volatile matter in a stencil (moisture) in the process which carries out heating fixation of the ink image. Since the coat film at the time of an extrusion lamination becomes uneven and adhesive variation with a stencil becomes large, it stops bearing an activity as a product on the other hand, although the above-mentioned failure is cancelable in a high-density-polyethylene independent case. Then, by blending both suitably, it is a reason for having found out that the above-mentioned trouble could be solved at once.

[0020] As the above-mentioned low density polyethylene, the consistency of 0.915-0.930g/cc and the thing for melt index; 1.0-30g /, and 10 minutes are desirable, and the thing of consistency; 0.940-

0.970g/cc, and 10 melt index; 1.0-30g /, and minutes is desirable as high density polyethylene. Since low density polyethylene extrudes at less than 10 % of the weight and thermal resistance with high density polyethylene sufficient at less than 10 % of the weight is not obtained impossible [a lamination that the coat film is uneven and normal] as a blend ratio, 10 - 90 % of the weight of consistency polyethylene and 90 - 10 % of the weight of high density polyethylene are desirable.

[0021] Thus, the thickness of the polyethylene layer to laminate is 5-50 micrometers. The range is suitable. 5 micrometers If it becomes thin, the waterproofness over a stencil becomes inadequate and, on the other hand, it is 50 micrometers. When it thickens, improvement on the engine performance beyond it cannot be desired any longer, but only serves as a cost rise. therefore, desirable thickness -- 10-30 micrometers it is .

[0022] In order to raise the adhesive strength of a stencil and the above-mentioned polyethylene layer, it is desirable to apply polyethylene derivatives, such as an ethylene-vinylacetate copolymer, an ethylene-acrylic ester copolymer, an ethylene-methacrylic ester copolymer, an ethylene-acrylic-acid copolymer, an ethylene-methacrylic-acid copolymer, an ethylene-acrylonitrile-acrylic-acid copolymer, and an ethylene-acrylonitrile-methacrylic-acid copolymer, on a stencil beforehand, or to carry out corona discharge treatment of the front face of a stencil. As an exception method, surface treatment indicated by each official report of JP,49-24126,A, 52-36176, 52-121683, 53-2612, 54-111331, and JP,51-25337,B can also be performed to a stencil.

[0023] As a stencil with which the original edition of this invention is presented, the mixed papermaking of a wood paper, synthetic-pulp paper, a wood paper, and synthetic-pulp paper can be used as it is.

[0024] Although an image acceptance layer is prepared on the polyethylene lamination layer of this waterproof base material, since adhesive strength with an image acceptance layer will improve if surface treatment, such as corona discharge treatment, glow discharge processing, flame processing, ultraviolet treatment, ozonization, and plasma treatment, is performed as U.S. Pat. No. 3,411,908 indicates the front face of a polyethylene lamination layer beforehand, it is desirable. Thus, the thickness of the image acceptance layer prepared is 5-30 micrometers. The range is suitable.

[0025] As an image acceptance layer, the hydrophilic layer which consists of an inorganic pigment and a binder, or the layer to which hydrophilization becomes possible by desensitization processing can be used.

[0026] Clay, a silica, a calcium carbonate, a zinc oxide, an aluminum oxide, a barium sulfate, etc. can be used for the inorganic pigment used for the image acceptance layer of a hydrophilic property. Moreover, as a binder, hydrophilic binders, such as polyvinyl alcohol, starch, a carboxymethyl cellulose, hydroxyethyl cellulose, casein, gelatin, polyacrylate, a polyvinyl pyrrolidone, and a poly methyl ether-maleic-anhydride copolymer, can be used. Moreover, in order to give a water resisting property if needed, melamine formalin resin, urea formalin resin, and other cross linking agents may be added.

[0027] For example, the layer using a zinc oxide and a hydrophobic binder as an image acceptance layer which carries out desensitization processing on the other hand, and is used is raised.

[0028] the zinc oxide with which this invention is presented -- for example, Japanese pigment American Institute of Technology editing -- like a publication to "new edition pigment handbook" 319 page, *****, and (1968 annual publications), although marketed as a zinc oxide, a zinc white, a wet zinc white, or an active white, any are sufficient.

[0029] namely, a zinc oxide -- a start raw material and the manufacture approach -- as dry process -- an French method (indirect method) and the United States -- what is called law (direct method) and a wet method -- it is -- for example, Forward Anabolism Study, Sakai Chemistry, Hakusui Chemistry, and Honjo chemical -- Co., Ltd. -- what is marketed from each company, such as Toho Zinc Co., Ltd. and Mitsui Mining & Smelting Industry, is mentioned.

[0030] Moreover, specifically, a vinyl chloride vinyl acetate copolymer, a styrene-butadiene copolymer, a styrene-methacrylate copolymer, a methacrylate copolymer, an acrylate copolymer, a vinyl acetate copolymer, polyvinyl petit RARU, alkyd resin, an epoxy resin, epoxy ester resin, polyester resin, polyurethane resin, etc. are mentioned as resin used as a binder. These resin may be used independently and may use two or more sorts together.

[0031] As for the content of the resin in an image acceptance layer, it is desirable for the weight ratio of resin/zinc oxide to show, and to be referred to as 9 / 91 - 20/80.

[0032] As for the desensitization of a zinc oxide, the processing liquid which used as the principal component the inorganic acid or organic acid which forms the cyanogen free processing liquid and the zinc ion which used as the principal component the cyanide compound content processing liquid which uses ferrocyanide salt and a ferry cyanogen salt as a principal component, an ammine cobalt complex, phytic acid and its derivative, and a guanidine derivative, and a chelate, or the processing liquid containing a water-soluble polymer is conventionally known as this kind of desensitization processing liquid.

[0033] For example, the thing of a publication is mentioned to JP,44-9045,B, 46-39403, JP,52-76101,A, 57-107889, 54-117201, etc. as cyanide compound content processing liquid.

[0034] The oily ink used for this invention below is explained. The oily ink with which this invention is presented is electric resistance 10⁹. It comes to distribute a solid-state and a hydrophobic resin particle in ordinary temperature in more than omegacm and a with a dielectric constant of 3.5 or less non-aqueous solvent at least.

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EXAMPLE

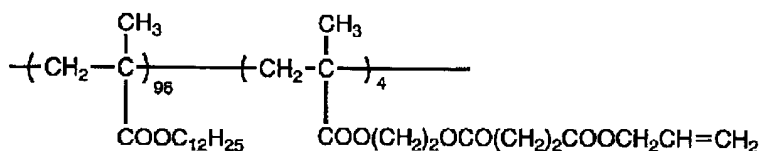
[Example] Although an example is shown below and this invention is explained to a detail, the content of this invention is not limited to these. First, the example of manufacture of the resin particle for ink (PL) is shown.

It warmed in temperature of 70 degrees C, agitating 10g (Q-1) of resin for distributed stability of the manufacture following structure of an example of manufacture 1 resin particle (PL-1), 100g of vinyl acetate, and an eye SOBA H384g mixed solution under a nitrogen air current. 2 and 2'-azobis (iso valeronitrile) (abbreviated-name A.I.V.N.) 0.8g was added as a polymerization initiator, and it reacted for 3 hours. Producing nebula, 20 minutes after adding an initiator, reaction temperature rose to 88 degrees C. Furthermore, after adding 0.5g of this initiator and reacting for 2 hours, temperature was agitated at 100 degrees C for raising 2 hours, and unreacted vinyl acetate was distilled off. Through and the obtained white distribution object were latexes with mono dispersion nature with a mean particle diameter of 0.23 micrometers good at 90% of conversion about the nylon cloth of 200 meshes after cooling. Particle size was measured by CAPA-500 (Horiba, Ltd. make).

[0079]

[Formula 2]

分散安定用樹脂(Q-1)



Mw 5×10^4 (数値は重量比)

[0080] Uptake and desiccation of a part for the resin particle which sedimented were done having covered some above-mentioned white distribution objects over the centrifugal separator (rotational frequency 1×10^4 r.p.m. turnover time 60 minutes). 2×10^5 and the glass transition point (Tg) of the weight average molecular weight for a resin particle (Mw: polystyrene conversion GPC value) were 38 degrees C.

[0081] Example 1 basis-weight 100 g/m² It is 5% water solution of a calcium chloride to paper of fine quality 20 g/m² It dried and the conductive stencil was obtained, after applying. The amount of desiccation coats is the aqueosity latex of an ethylene-methyl-acrylate-acrylic-acid copolymer (mole ratio 65:30:5) to these both sides 0.2 g/m² After applying and drying so that it may become, Consistency [of 0.920g/cc], and melt index 5.0g/low-density-polyethylene 70wt% of 10 minutes The consistency of 0.950g/cc, and melt index 8.0g/high-density-polyethylene 1.5wt% of 10 minutes And conductive carbon 15wt% It extrudes using the pellet which carried out fusion kneading. By law It is 25 micrometers respectively to both sides of a stencil. The base material of this invention which laminates by thickness and has the thickness of a uniform polyethylene layer was obtained.

[0082] This base material is called the waterproof base material 1 below. 0.01 g/m² (45-minute value)

and the Beck smoothness of the cop water absorbing capacity of this waterproof base material 1 front face were 1,500 seconds / ten cc.

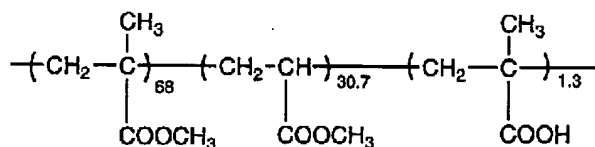
[0083] Subsequently, it is the front face of the polyethylene layer of one side of this base material 5 KVA-sec/m² Corona discharge treatment is carried out on conditions, and the amount of desiccation coats is coating liquid of the following presentation on this 15 g/m² It applied and dried and the image acceptance layer was prepared so that it might become. Even if it dried for 1 minute in the drying temperature of 100 degrees C, the adhesion failure to the pass roll by softening of a polyethylene layer was not generated.

[0084] An image acceptance layer, 100g of coating liquid oxidation-in-the-gas-phase zinc, 3.0g (B-1) of binding resin of the following structure, 17.0g (B-2) of binding resin, 0.15g of benzoic acids, and toluene 155g mixture were distributed for 3 minutes by rotational frequency 6x10³ rpm using the wet disperser homogenizer (NIPPON SEIKI CO., LTD. make). Thus, the obtained original edition for printing was made into the sample 1.

[0085]

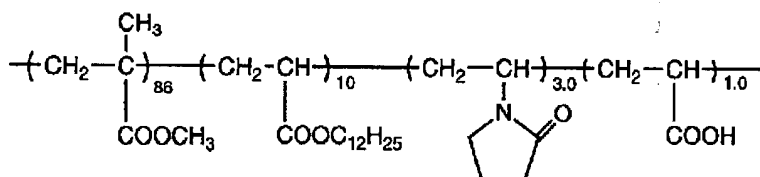
[Formula 3]

結着樹脂 (B-1)



Mw 9X10³

結着樹脂 (B-2)



Mw4X10⁴ (数値は重量比)

[0086] They are 5 KVA-sec/m² to both sides of the stencil used in the example 2 example 1. Under conditions corona discharge treatment After *****, The consistency of 0.925g/cc, the low density polyethylene of 15% and the consistency of 0.955g/cc for melt index 3.0g / 10 minutes, The base material of this invention which extrudes melt index 15.0g / 70% [of high density polyethylene for 10 minutes], and conductive carbon 15% using the pellet which carried out fusion kneading, laminates by the thickness of 25 micrometers respectively to both sides of a stencil by law, and has the thickness of a uniform polyethylene layer was obtained.

[0087] This base material is called the waterproof base material 2 below. 0.01 g/m² (45-minute value) and the Beck smoothness of the cop water absorbing capacity of this waterproof base material 2 front face were 1,500 seconds / ten cc. Subsequently, corona discharge treatment of one side of a polyethylene layer was carried out like the case of an example 1, and the same image acceptance layer as a sample 1 was prepared. When carrying out spreading desiccation of the image acceptance layer, adhesion failure was not generated between the polyethylene layer and the pass roll. Thus, the obtained original edition for printing was made into the sample 2.

[0088] It is basis weight 100 g/m² as example of comparison 1 base. Using paper of fine quality, the coating for undershirt layers of the following presentation is applied to one field of a base using a wire bar, and it is desiccation coverage 10 g/m². The undershirt layer was prepared. The smoothness of an undershirt layer front face is 150 seconds / ten cc, and prepared smoothness to 1500 (a second / ten cc) by calender processing. Cop water absorbing capacity was 2 g/m² (45-minute value).

[0089]

<Coating for undershirt layers> - silica gel Ten weight sections - SBR latex (a 50-% of the weight water dispersion, Tg25 degree C) 92 weight sections - clay (45-% of the weight water dispersion) The 110 weight sections - melamine (80-% of the weight water solution) Five weight sections - water The 191 weight sections [0090] Furthermore, the coating for back coat layers of the following presentation is applied to the field of another side of a base using a wire bar, and it is desiccation coverage 12 g/m². After preparing a back coat layer, calender conditions were set up and calender processing was performed so that the smoothness of a back coat layer might turn into 50 (a second / ten cc) extent. Cop water absorbing capacity was 5 g/m² (45-minute value).

[0091]

<Coating for back coat layers> - kaolin (50% water dispersion) The 200 weight sections - polyvinyl alcohol water solution (10%) 60 weight sections - SBR latex (49% of solid content, Tg0 degree C) The 100 weight sections Initial condensate of - melamine resin Five weight sections (80% of solid content, SUMIRETTSU resin SR-613)

[0092] This base material is called the waterproof base material 3 below. The same image acceptance layer as examples 1 and 2 was prepared in the undershirt layer front face of this waterproof base material 3. Thus, the obtained original edition for printing was made into the sample 3.

[0093] Servo PUROTA DA 8400 by the graph deck company which can draw a personal computer output be converted using sample No.1-No.3 of the original edition for lithography created as mentioned above, and the pen plotter section be equipped with the ink discharge head showed in drawing 2, and the oily ink (IK-1) of the following content be used for the original edition for lithography installed on the counterelectrode which set spacing of 1.5mm, and it printed and engraved.

[0094] <Oily ink (IK-1)> dodecyl methacrylate / acrylic-acid copolymer (copolymerization ratio: 95/5-fold quantitative ratio) was put into the paint shaker (Tokyo Seiki Co., Ltd. make) with the glass bead, 10g, Nigrosine 10g, and 30g of shell ZORU 71 were distributed for it for 4 hours, and the very small distributed object of Nigrosine was obtained.

[0095] Black oiliness ink was created by diluting 2.5g, FOC-1400 (product [made from Nissan Chemistry], tetradecyl alcohol) 15g, and 0.08g of octadecene-half maleic-acid octadecyl amide copolymers for 6g (PL-1) (as a solid-state daily dose) of resin particles of the example 1 of manufacture of the resin particle for ink, and the above-mentioned Nigrosine distribution object to 11. of Isopar G.

[0096] Next, after engraving as mentioned above, desensitization processing liquid (ELP-EZ: Fuji Photo Film trade name) was put into the etcher section of a full automatic printing machine (AM-2850, trade name made from EEMU), the solution which diluted desensitization processing liquid (SICS) with distilled water 4 times was put into the dampening water carrier tray as dampening water, and it printed through the platemaking object using the Japanese ink ink for offset printing to the printing machine. Assessment of print durability was made into printing number of sheets until lack of an image can distinguish visually.

[0097]

Assessment result 1 Sample NO Base material smoothness Base material cop water absorbing capacity The number of *-proof sheets (A second / ten cc) (g/m² 45-minute value) 1 (this invention) 1500 0.01 15,000 2 (this invention) 1500 0.01 15,000 3 (example of a comparison) 1500 Surface 2.0 rear face 5.0 3,000 [0098] The cop water absorbing capacity of a base material of the number of *-proof sheets is *-proof [quantity] with 0.01 and few samples 1 and 2 as greatly as 1 and 5000. The sample 3 with as much cop water absorbing capacity mentioned as the example of a comparison on the other hand as [2.0-5.0] has 3,000 and low print durability. This is considered that are that a base material absorbs water and produced swelling or elongation, and the image acceptance layer deformed as a result, or separated from the base material and it resulted during printing at lack of an image.

[0099] Example They are 6 g/m², using the dispersion liquid of the following presentation in 4, 5, and the 6 aforementioned base materials 1, 2, and 3 as the coverage after desiccation. The image acceptance layer was prepared and it considered as samples 4, 5, and 6, respectively so that it might become. Gelatin (Wako Pure Chem first class goods) 3g Colloidal silica 20g (the product made from the Nissan

chemistry; Snow tech R-503 or 20% water solution) Silica gel (the product made from the Fuji SHIRISHIA chemistry; SAIRISHIA 310) 7g Hardening agent 0.4g Distilled water The paint shaker distributed 100g for 10 minutes with glass and a bead. It printed and engraved using oily ink (IK-1) about the original edition samples 4, 5, and 6 for lithography as well as samples 1, 2, and 3.

[0100] Next, these were printed with the full automatic printing machine (AM-2850) after platemaking, without performing desensitization processing. Dampening water used distilled water and ink used the Japanese ink ink for offset printing.

[0101]

Assessment result 2 Sample NO Base material smoothness Base material cop water absorbing capacity The number of **-proof sheets (A second / ten cc) (g/m² 45-minute value) 4 (this invention) 1500 0.01 10,000 5 (this invention) 1500 0.01 10,000 6 (example of a comparison) 1500 surface 2.0 rear face 5.0 The number of **-proof [2,000] sheets is **-proof [quantity] far compared with 2,000 of the sample 6 with as much cop water absorbing capacity to the cop water absorbing capacity of a base material mentioned as 10,000 and the example of a comparison with few samples 4 and 5 with 0.01 as [2.0-5.0].

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the outline block diagram showing an example of the equipment system used for this invention.

[Drawing 2] It is the outline block diagram showing the important section of the ink jet recording device used for this invention.

[Drawing 3] It is the fragmentary sectional view of the head of the ink jet recording device used for this invention.

[Description of Notations]

1 Ink Jet Recording Device

2 Master

3 Computer

4 Pass

10 Head

10a Regurgitation slit

10b Discharge electrode


10c Counterelectrode

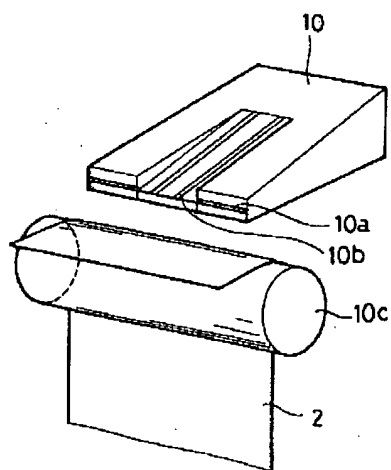
11 Oily Ink

101 Up Unit

102 Lower Unit

[Translation done.]

Drawing selection **drawing 2** 




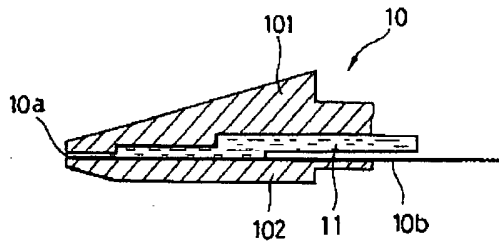
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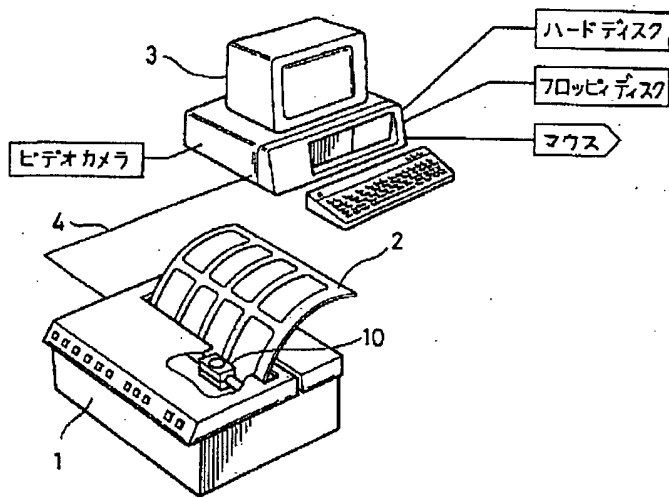
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Drawing selection drawing 3 



[Translation done.]

Drawing selection drawing 1



[Translation done.]